

REMARKS

Entry of the foregoing, re-examination and reconsideration of the subject matter identified in caption, as amended, pursuant to and consistent with 37 C.F.R. § 1.111, and in light of the remarks which follow, are respectfully requested.

In the Amendment, claim 1 has been amended to further improve its clarity and to further recite that the thin tube comprises the tubular body (b), and the thick tube comprises the tubular body (a). This amendment is supported by the disclosure, at least paragraph [0022]. No new matter has been added. Upon entry of the Amendment, claims 1-10 will be all the claims pending in the application.

I. Response to Rejection under 35 U.S.C. § 112, Second Paragraph

Claims 1-10 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly indefinite. Applicants respectfully submit that the claims as amended are not indefinite.

In the Amendment, claim 1 has been amended to recite a thermoplastic resin composition (A) containing a mixture of a styrene type elastomer and a polyolefin type resin, as suggested by the Examiner. Moreover, claim 1 has been amended to recite that the thin tube comprises the tubular body (b), and the thick tube comprises the tubular body (a). Claims 2-10 depend from claim 1. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the § 112 rejection.

II. Response to Rejections under 35 U.S.C. § 103(a)

a. Claims 1-5, 9 and 10 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over U.S. Patent Application Publication No. 2002/0100540 ("Savitski") in view of U.S. Patent Application Publication No. 2002/0179233 ("Ruotsalainen") and U.S. Patent No. 5,356,709 ("Woo").

b. Claims 1 and 3-10 were rejected under 35 U.S.C. §103(a) as allegedly obvious over Ruotsalainen, and U.S. Patent No. 6,391,972 ("Hatakeyama").

Applicants respectfully submit that the present claims are patentable over the cited reference for at least the following reasons.

Sole independent claim 1 recites a method for the production of a tubular article resulting from joining by insertion a tubular body (a) possessed of a layer comprised of a thermoplastic resin composition (A) containing a mixture of a styrene type elastomer and a polyolefin type resin and a tubular body (b) comprised of a thermoplastic resin composition (B) containing a polyolefin, comprising: (i) a step of interposing an absorbent having an absorption wavelength of 700 - 2,500 nm on the tubular body (a) and/or the tubular body (b) to form an interposed part of absorbent, (ii) a step of connecting by mutual insertion the tubular body (a) and the tubular body (b), and (iii) a step of causing the interposed part of absorbent to adhere by irradiation with a laser beam, thereby forming the tubular article having a thin tube and a thick tube, wherein the thin tube comprises the tubular body (b), and the thick tube comprises the tubular body (a), wherein prior to the mutual insertion, a ratio of an outside diameter of the thin tube and an inside diameter of the thick tube (outside diameter of thin tube/inside diameter of thick tube = X) in the range of $1 < X < 1.25$, and wherein the storage elastic modulus of the tubular body (a) is in the range of $1.0 \times 10^7 - 6.7 \times 10^8$ Pa, the storage elastic modulus of the tubular body (b) is in the range of $2 \times 10^7 - 9 \times 10^8$ Pa, and the storage elastic modulus of the tubular body (b) is higher than that of the tubular body (a).

In the recited method, an inner hard part, i.e., tubular body (b), as the thin tube, and an outer soft part, i.e., tubular body (a), as the thick tube, are connected by mutual insertion. It is noted that the storage elastic modulus of the tubular body (b) is higher than that of the tubular body (a). The larger storage elastic modulus indicates that the tubular body (b) is harder and

difficult to deform, and the smaller storage elastic modulus indicates that the tubular body (a) is softer and easily deforms. The present application relates to a method for joining tubular bodies, rather than providing protection by a thick tubular body. The present specification describes in paragraph [0045], that in the above mentioned configuration, the softer thick tube brings an excellent inserting property at assemblage.

Savitski is cited for the disclosure of a method of joining tubes by electromagnetic radiation with use of a radiation absorbing material such as carbon blacks (paragraphs [0032] and [0061]). The Office Action concedes that Savitski does not disclose the relationship between the diameters of the tubes and the specific materials for the tubes.

Ruotsalainen discloses a process of transmission laser welding of plastic parts such as housing (paragraphs [0002] and [0008]). In Ruotsalainen's process, the parts are connected by interference fit and the laser beam irradiates only the connected zone (paragraph [0008]). The plastic parts may have different stiffness from each other (paragraph [0010]). Ruotsalainen further describes an embodiment where the diameter of inner part is larger than that of the outer part, as shown in Fig. 1, by providing an annular rib onto the outer surface of inner part (paragraph [0014]).

Specifically, Ruotsalainen provides an annular rib on the outer surface of the insert element to fix by an interference fit as shown in Fig. 1, or on the outer surface of the tubular shell (paragraph [0014] and Fig. 1). The annular rib means an annular protrusion.

On the contrary, Savitski provides a recess on each end of pipes to be joined, to accommodate the coupling sleeve that covers the abutted ends of the pipes (paragraph [0037]). The recessed may be formed on an interior of the pipes to be joined.

As such, Ruotsalainen utilizes a means, which is contrary to Savitski's means, to fix the two parts together. Therefore, a skilled person who intends to fix tightly two parts together would not have been motivated to combine the disclosures by Savitski and Ruotsalainen.

Further, Ruotsalainen's invention aims to provide a simple joining method to form a plastic housing composed of a plurality of parts. Such plastic housing is typically used to form electrical devices and to accommodate electrical components (paragraphs [0002] and [0006]). Ruotsalainen describes an example in which the connected housing encloses magnetic sensor to be protected (paragraph [0024] and Fig. 1).

The housing described in Ruotsalainen usually functions as a covering or protection for the inside electrical components to avoid physical damages or dirt of the components. As for the embodiment shown in Fig. 1 of Ruotsalainen, naturally the outer housing part 12 should be harder than the inner housing part 14 to protect the magnetic sensor 22. At least, the outer housing part should have an equal hardness to the inner housing part 14. If the outer housing part is soft, the housing cannot fulfill the function of protecting the inside electrical components. As such, Ruotsalainen teaches away from using a soft outer housing part. Further, Ruotsalainen does not disclose or suggest the above noted effects achievable in the presently claimed invention. As such, Ruotsalainen does not rectify the deficiencies of Savitski.

Woo discloses a resin which is an alternative to polyvinyl chloride (column 1, lines 52 to 55). The resin includes an elastomer and a multilayer structure (column 1, line 66 to column 2, line 3). As Woo does not rectify the above noted deficiencies of Savitski and Ruotsalainen, even if Savitski, Ruotsalainen and Woo are combined, the combination still would not result in the subject matter of present claim 1.

Hatakeyama discloses a plastic member which includes a mixture of a styrene type elastomer and a polyolefin, which has wet feel and good touch (column 1, lines 22 to 25).

Hatakeyama does not rectify the deficiencies of Ruotsalainen. As such, even if Ruotsalainen and Hatakeyama are combined, the combination still would not result in the subject matter of present claim 1.

In view of the foregoing, Applicants respectfully submit that claim 1 is patentable over Savitski in view of Ruotsalainen and Woo, and over Ruotsalainen in view of Hatakeyama, and thus the rejections should be withdrawn. Additionally, claims 2-10 depend from claim 1, directly or indirectly, and thus are patentable over the cited references at least by virtue of their dependency.

III. Conclusion

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order and such action is earnestly solicited. If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned at his earliest convenience.

Respectfully submitted,

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